

||||| 特集：宇宙に生きる—基礎から応用まで— |||||
(原著論文)

スペースコロニー型宇宙農場の概念設計検討

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Study of Conceptual Design for Space Colony Type Space Plantation

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Abstract

This paper presents the modeling of a semi-closed system for space colony type space plantation incorporating heat balance and growth curve (Mitscherlich-Bertalanffy curve). In this model, environments such as atmospheric composition, pressure, gravity and day/night cycle are assumed to be the same as on the earth. The plants growth is taken as a function of temperature, and the harvest would be gathered when the ear weight computed with translocation rate of dry matter from vegetative organs to panicle reaches a regulated value. Under these conditions, a simulation program was coded by C-language. According to this simulation system, 1) the temperature of plantation determined by louver open/close temperature 2) the fastest plants growth is simulated in the present model. In the future, it is necessary to adjust the modules of growth curve for improvement more realistic food production.